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between whiles. When disturbed the birds remain quite near, but are not demonstrative in their uneasiness, usually keeping well concealed from view and uttering very few notes, few, if any, indicative of alarm.

From the latter part of May until the middle of July the birds I observed were exceedingly shy and very quiet. June 30 I secured the first young bird from the nest. By July 20 family parties were very common and made noisy crowds. To approach one of these parties, was to be at once taken for an evil character. The parent birds would immediately grow excited trying to hurry their charges along. The family parties were common until about August 20, when they were more frequently seen in pairs or singly until all had departed.

The present year I have seen, compared with last year, very few birds. Also the breeding commenced very much later and I did not take a specimen showing signs of breeding by the swollen condition of the ovaries until May 8. Not only with *V. flavoviridis* have I noticed the late date of breeding, but with all the birds breeding in the vicinity of San José. This is probably owing to the commencement of the rainy season being a month later than last year, that is the middle of May this year, whereas last year it had begun by the middle of April. Before the beginning of the wet season vegetation is parched and dry, and insects of all kinds are much less abundant.

NORTH AMERICAN BIRDS FOUND AT SAN JOSÉ, COSTA RICA, WITH NOTES ON THEIR MIGRATION.

BY GEORGE K. CHERRIE.

According to Zeledon's list of the birds of Costa Rica, published in Vol. I, *Annales del Museo Nacional de Costa Rica*, there are found here 190 of the birds recognized by the A. O. U. as North American. Of this number 81 are found at San José, as represented in my own collection or that of the Museo Nacional. While the time I have been in Costa Rica is short, I yet feel that

the notes I present may be of some value as they represent the observations made in the field on an average of four mornings each week.

On the night of Sept. 28, 1889, great numbers of birds were killed by flying against the electric light wires. The night was very dark, and the birds, which were evidently migrating, became bewildered by the electric lights. Their frightened cries were heard all night, and in the morning many dead birds were picked up in the streets. The occurrence was so novel and marked as to attract general attention. I made thirty-five skins from birds found dead in the streets, but generally they were too much mutilated to be available for specimens. I noticed among them eight species, seven of them being migrants.

1. *Anas discors*.—Oct. 27, 1889, I saw a Blue-winged Teal on the river just south of the city. It is the only Duck I have seen in the vicinity of San José.
2. *Ardea herodias*.—About the first of December one was shot just east of the city and brought to the museum.
3. *Ardea egretta*.—During December and January several were shot.
4. *Ardea caerulea*.—During December several were brought to the museum.
5. *Ardea virescens*.—They are resident and breed, but are only rarely seen.
6. *Nycticorax violaceus*.—From Aug. 25, 1889, until Oct. 15, I occasionally saw them. All seen were young birds.
7. *Porzana carolina*.—The museum possesses a single specimen labelled, "San José, 1881, J. C. Zeledon."
8. *Gallinago delicata*.—First noted Oct. 9, 1889; for a time they were not uncommon, but then seemed to disappear, and none were noted again until Feb. 1, 1890. I saw the last Feb. 16.
9. *Tringa maculata*.—This species appeared and disappeared with the Bartramian Sandpiper.
10. *Totanus solitarius*.—I took a female April 27, 1889. In the fall I saw the first Sept. 16. They were common from that time until Dec. 1, 1889. I have not noted any since.
11. *Bartramia longicauda*.—From Sept. 25, 1889, until Nov. 15, they were common.
12. *Tryngites subruficollis*.—They appeared and disappeared with *Bartramia longicauda* and *Tringa maculata*. Their early disappearance was probably due to the dry season commencing and consequently destroying their feeding grounds.
13. *Actitis macularia*.—I saw the first in the fall Oct. 4, 1889. They were common until Feb. 16, 1890, when I saw the last.
14. *Charadrius dominicus*.—Sr. Don Manuel Caranza brought one to the museum Dec. 2, 1889. Dec. 3 I saw three others. Not noted again.

15. *Ægialitis vocifera*.—From Nov. 20, 1889, they were abundant until March 12, 1890.
16. *Zenaidura macroura*.—During December and January three or four were taken.
17. *Columbigallina passerina*.—Very common resident. Breeds.
18. *Cathartes aura*.—Occasionally seen.
19. *Catharista atrata*—Exceedingly abundant and ever present.
20. *Circus hudsonius*.—One was taken Oct. 1, 1889, after that they were frequently seen until Feb. 2, 1890.
21. *Parabuteo unicinctus harrisi*.—I have not seen any, but there is one in the museum collection labelled San José.
22. *Buteo swainsoni*.—One was taken Nov. 25, 1889.
23. *Buteo latissimus*.—Noted during December and January, and one seen April 20, 1890.
24. *Falco sparverius*.—Were common from Oct. 27, 1889, until Feb. 16, 1890.
25. *Polyborus cheriway*.—Are not common about San José, but are resident and breed near the city.
26. *Glaucidium phalaenoides*.—A tolerably common resident.
27. *Crotophaga sulcirostris*.—Abundant resident.
28. *Coccyzus americanus*.—Have taken one.
29. *Coccyzus erythrophthalmus*.—I am assured by Señor Zeledón that it is taken in San José.
30. *Ceryle cabanisi*.—Common resident. Breeds.
31. *Chordeiles texensis*.—Two specimens in the museum collection, male and female, both labelled, "San José, Nov. 6, 1888, A. Alfaro."
32. *Cypseloides niger*.—There is a single specimen in the museum collection labelled, "San José."
33. *Trochilus colubris*.—I have not noted any, and there are none in the museum collection, but I am assured by Sr. Don José C. Zeledón that they are found here.
34. *Amazilia fuscicaudata*.—Common resident. Breeding, I believe, every month in the year.
35. *Milvulus tyrannus*.—I noted the first at San José, June 7, 1889, a male in worn plumage. The second was noted June 14, when they were common in the large open fields. They remained common until the middle of July, then were absent until Sept. 18, when I saw quite a number. By the first of November they had again disappeared, and they have not yet (June 19) appeared this year. They breed quite commonly at a little lower altitude.
36. *Pitangus derbianus*.—Have taken it once or twice.
37. *Myiozetetes texensis*.—In the spring of 1889 they were not uncommon in the vicinity of the city, and one nest and set of eggs were taken. But they were rarely seen from June 20 until Oct. 13, 1889, when I recorded them as "quite common by the river." None were noted again until Feb. 9, 1890, then some were seen in company with several *Megarhynchus pitangua*. None have been noted since that time, and I do not believe any have bred here this year.

38. *Myiarchus crinitus*.—I have only one record, that of a male taken Nov. 24, 1889.

39. *Contopus borealis*.—I have notes for only five dates, and but a single individual was seen each time. The first was Oct. 4; second, Oct. 17; third and last in 1889, Oct. 27. None were seen until April 27, 1890, when I took a fine female; it was very fat. A male was taken May 7.

40. *Contopus virens*.—In the spring of 1889 the last one, a female, was seen April 11. The first to return was a male on August 21. This year I took the last April 29. They are never common.

41. *Contopus richardsonii*.—I find such difficulty in separating *C. virens* and *C. richardsonii* that it is only typical examples that I can refer to either with any certainty that I am correct. I took the first typical *richardsonii* Oct. 27, 1889. From that time until the middle of November they were much more frequently met with than *C. virens*. None were noted after Dec. 1.

42. *Empidonax flaviventris*.—Have taken only one, a male, Oct. 27, 1889.

43. *Empidonax acadicus*.—Took two in the fall of 1889, one Sept. 17, the other Oct. 4. In the spring of 1890, in the early part of May, they were very common, frequenting the fringe of woods along the river bank. May 11, I took six and saw others. All were very fat.

44. *Callothrush robustus*.—Common and permanent resident at San José. Seems to have a preference for the nest of *Buarremom gutturalis*.

45. *Sturnella magna mexicana*.—A common bird, breeding in the vicinity. During the worst of the rainy season in 1889, from the last of July until the middle of November, they disappeared, but were found in other localities. Several were noted Nov. 24, but they were not again common until the first of March, 1890.

46. *Icterus spurius*.—I have no spring notes for 1889. I took the first fall migrant, a female, July 31. The second noted was a male Aug. 13. By August 25 they were tolerably common, but they disappeared immediately after that, being rarely seen. The last were seen March 2, 1890.

47. *Icterus galbula*.—Quite rare. The first seen in the fall of 1889 was on Oct. 27; the last in the spring, March 2, 1890.

48. *Habia ludoviciana*.—Oct. 23, 1889, I noted the first arrival, a young male. They were then seen occasionally until Feb. 3, 1890, when I took the last, a female.

49. *Passerina cyanea*.—There are two skins in the museum collection labelled respectively "San José, Nov. 5, 1887," and "San José, Nov. 17, 1887. A. Alfaro." I have not noted the bird myself.

50. *Spiza americana*.—My only record is for Sept. 29, 1889, many having perished the night before. Almost all were young birds, with a slight preponderance of males. Mr. J. C. Zeledon reported them a month before from Pozo Azul.

51. *Euphonia elegantissima*.—There are two specimens in the museum collection, both males, one without date, the other labelled "Dec. 20, 1884, Anastasio Alfaro."

52. **Piranga rubra.**—Not an uncommon bird for a little time after they first arrive in the fall. My first note is for Oct. 26, 1889, when I saw several. I saw none in the spring, but there is a female in the museum collection labelled "San José, Jan 10, 1885. A. Alfaro."

53. **Chelidon erythrogaster.**—First noted Sept. 8, 1889, when they were quite abundant. They were common until early in February.

54. **Stelgidopteryx serripennis.**—Very common throughout the rainy season, but seldom seen in the dry season, from early in December until the latter part of April.

55. **Vireo olivaceus.**—But seldom seen. I took a female Oct. 9, 1889. Noted the last this spring April 20.

56. **Vireo flavoviridis.**—Breeds abundantly, disappearing from San José only during the dry season. In the fall of 1889 the last were seen Sept. 29, several having been killed the night before. They return about the middle of April. For fuller notes on *V. flavoviridis* see the present number of 'The Auk' pp. 329-331.

57. **Vireo philadelphicus.**—I have only once noted the Philadelphia Vireo. April 23, 1889, I took a female.

58. **Vireo flavifrons**—Seldom met with here. The first arrival in 1889 was a female Oct. 25. Feb. 9, 1890, I saw two; they were the last.

59. **Mniotilla varia.**—Arriving in San José the middle of February, 1889, I made no notes on the Black-and-white Creeper that spring, and the first noted in the fall was Aug. 20, when I saw one industriously searching the branches for food. The next were noted Aug. 23, when two females were taken, both birds of the year. They are never at any time even tolerably common, and from Sept. 15, they are exceedingly rare. One was noted Nov. 10, and the last seen, a fine male, was on Feb. 28, 1890.

60. **Protonotaria citrea.**—The first were noted Oct. 13, 1889, on which date they were not uncommon. They were seen again Oct. 21. A skin in the museum collection is labelled "San José, Oct. 29, 1887." None were seen in the spring.

61. **Helmitherus vermivorus.**—I find a single skin in the Museo Nacional, labelled "San José."

62. **Helminthophila chrysoptera.**—Took a fine female Sept. 15, 1889. They were quite abundant on that date. This is the only note I have made regarding this species.

63. **Helminthophila peregrina.**—I have no notes for the spring of 1889. In the fall the first were noted Sept. 17; several were seen. None were met again until Oct. 14, when I took a female. From that time on they were common until Oct. 27, when they were very abundant, the most so of all the Warblers. Then they seemed to decrease in numbers until Dec. 5, when I again found them abundant. Through January and February they were tolerably common. The last were seen March 6.

64. **Dendroica aestiva.**—This is one of the most common of the Warblers. The last was seen in the spring of 1889 on May 9. The present year I saw the last May 11. They made their first appearance in the

fall of 1889 Aug. 25, on which date a number were seen. Those taken were very fat. From this date they were common, and by Sept. 17 abundant, then the numbers seem to have diminished, until during October, November, December and January they were only tolerably common. During the latter part of January and the first of February they were the most common Warbler in the vicinity of San José. From this time they were common until the first of May. None of those taken last showed any signs of breeding.

65. *Dendroica coronata*.—They were not noted in the fall, and only twice in the spring: a female in good plumage was taken Jan. 19, and a male and a female were seen Feb. 15.

66. *Dendroica pensylvanica*.—In the spring of 1889 the last individual seen was a male, April 24. The first arrival noted in the fall was one of the unfortunates of the night of Sept. 28, also a male. By Oct. 13 they were abundant, but this was their last appearance. There is one skin in the museum collection labelled "San José, Nov. 1887." None were noted in the spring of 1890.

67. *Dendroica blackburniae*.—The first Blackburnian Warbler was noted Sept. 8. They were not seen again until the 24th, and then again not until the 29th, when a specimen was picked up in the street, a victim of the panic of the night before. They were common from that time until Oct. 13, when I recorded them as abundant, but within three or four days all had disappeared and none were met with again until their last appearance Feb. 9, 1890, when several were seen.

68. *Dendroica virens*.—The museum possesses a single skin labelled, "San José, Nov., 1887. Alfaro."

69. *Seiurus aurocipillus*.—I have only once noted the Ovenbird at San José, on Oct 27, 1889.

70. *Seiurus noveboracensis*.—Last year (1889) I had frequent notes until May 21, when I took a female, the last seen. This spring my last note is April 20. In the fall of 1889, I saw the first Sept. 14. A number were victims in the disaster of the night of Sept. 28. They are never common.

71. *Seiurus motacilla*.—I have one in my collection, taken in San José, March 9, 1890.

72. *Geothlypis formosa*.—There is a skin in the museum, without date.

73. *Geothlypis philadelphia*.—Rare in this vicinity. The last seen in the spring of 1889 was on April 24; the last in 1890, April 27. The first to return last year was noted Sept. 1. Quite a number perished on the night of Sept. 28, 1889; with one exception they were all females.

74. *Geothlypis macgillivrayi*.—A very good example of Macgillivray's Warbler was one of the victims of Sept. 28.

75. *Geothlypis trichas*.—Very rarely seen at San José. This year I took a female in good plumage April 29. The last seen in 1889 was a female, March 29. I have no records for the fall and there are no fall specimens in the museum collection.

76. *Icteria virens*.—In the fall of 1889 the first appeared Oct. 26. For two weeks they were not uncommon and then disappeared entirely, not being seen again until March 1, 1890. They were tolerably common until the 5th, when I took the last, a female. For the spring of 1889 I have only one note, that of a female taken Feb. 15.

77. *Sylvania pusilla pileolata*.—First seen Oct. 27 (1889), by Nov. 20 they are quite common, and throughout December are the most abundant Warbler. Saw the last March 6.

78. *Sylvania canadensis*.—The first I saw at San José was a female picked up in the street on the morning of Sept. 29, 1889. They were not uncommon from that date until Oct. 6 when I found them abundant along the river banks. None appeared in the spring.

79. *Setophaga ruticilla*.—I have no notes for the spring of 1889. The first for the fall is that of a female Aug. 13; the second, also a female, was seen on the 20th; the first male was noted on the 23d; on the 27th I saw the second and last male noted, although the females were tolerably common until March 6 when the last was seen.

80. *Turdus fuscescens*.—I have seen only a single example, brought in the flesh to the museum Oct. 14, 1889, by Señor Manuel Caranza.

81. *Turdus ustulatus swainsonii*.—There is one specimen in the museum collection, labelled "San José, Nov. 7, 1887. A. Alfaro."

NOTES ON HABITS OF A FEW BIRDS OF ORANGE COUNTY, FLORIDA.

BY D. MORTIMER.

Ardea herodias. GREAT BLUE HERON.

THE Great Blue Heron is commonly rather wary, but I have noticed one or two singular exceptions to this rule. On June 23, 1888, my brother and I were fishing in a small creek that drains from the great prairie on the west shore of Lake Jessup. We had shifted our position to a certain point when we noticed that some creature was splashing about just around the nearest bend. Watching for a moment, we soon saw a Great Blue Heron busily engaged in catching a lunch. It was wading in water that reached above the joints of its legs, and its mode of proceeding was to lift one foot after the other slowly and deliberately clear of the surface, thus moving steadily and silently. Frequently it struck